

A Multivariate Model of Patients' Satisfaction With Treatment for Posttraumatic Stress Disorder

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Prior studies have concluded that patients' pretreatment characteristics contribute more to their satisfaction with mental health treatment than any other domain. We expand the representation of treatment characteristics in an examination of satisfaction across both inpatient and outpatient settings. Data were drawn from an inpatient ($n = 831$) and an outpatient ($n = 554$) study of the treatment of PTSD. We used structural equation modeling to specify and evaluate a model of satisfaction with comparable elements for inpatient and both short and long-term outpatient treatment. Results indicate that the quality and quantity of patients' participation in treatment were more important to the development of their satisfaction with treatment than their pretreatment characteristics. Among treatment characteristics, the social climate of the inpatient milieu and the focus on war traumas in outpatient therapy had major effects on the quality and quantity of patients' participation and their satisfaction.

KEY WORDS: patient satisfaction; treatment characteristics; pretreatment characteristics; structural equation modeling.

Patients' satisfaction with mental health treatment has been studied empirically for several decades (e.g., Attkisson & Zwick, 1982; Lebow, 1983). Satisfaction has achieved greater prominence for mental health professionals with the growing view of patients as consumers (Abramowitz, Cote, & Berry, 1987; McIver & Carr-Hill, 1989). This viewpoint is particularly pertinent in the case of patients who remain in treatment for long periods of time because they are the highest users of services. Additionally, satisfaction warrants consideration as an important indicator of the quality of health care (Williams, 1994) because satisfied patients tend to adhere more conscientiously to therapeutic and rehabilitative regimens

(Rosenthal & Shannon, 1997; Sitzia & Wood, 1997; Williams, Coyle, & Healy, 1998). It is therefore in the interests of mental health professionals to gain a greater understanding of the factors that contribute to patient satisfaction so that they can address these factors to the greatest extent possible in the design of treatment systems and in the delivery of services.

Several studies have reported that the principal influence on treatment satisfaction is the characteristics of patients themselves, including demographics (for example, older age, lower education, and minority ethnicity) and background experiences such as greater abuse or trauma (Baker, 1996; Fontana & Rosenheck, 2001; Greenwood, Key, Burns, Bristow, & Sedgwick, 1999; Plichta, Duncan, & Plichta, 1996; Rosenheck, Wilson, & Meterko, 1997; Sixma, Spreeuwenberg, & van der Pasch, 1998; Svensson & Hansson, 1994). Other investigations have concluded that improvement in patients' clinical state (for example, symptoms and social functioning) is an important determinant of satisfaction as well (Attkisson & Zwick, 1982; Deane, 1993; Edwards, Yarvis, Mueller, & Langsley, 1978;

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Fontana & Rosenheck, 2001; Holcomb, Parker, Leong, Thiele, & Higdon, 1998; Pellino & Ward, 1998). On the other hand, several studies have failed to find evidence that positive clinical change is associated with patients' satisfaction in either mental health (Lambert, Salzer, & Bickman, 1998; Pekarik & Wolff, 1996; Rey, Plapp, & Simpson, 1999) or medical care (Covinsky et al., 1998; Kane, Maciejewski, & Finch, 1997; Katz et al., 1995).

Still other influences that have been linked to patients' satisfaction are program and treatment factors such as the use of medications, type(s) of treatment provided and the social climate of the inpatient or residential treatment program (Covinsky et al., 1998; Fontana & Rosenheck, 2001; Friedman, 1997; Holcomb et al., 1998; Kane et al., 1997; Katz et al., 1995; Rosenheck, Wilson, et al., 1997). For example, Moos and Moos (1998) found that participants who perceived the social climate of the milieu to be "supportive and goal-directed" participated in treatment more and with greater involvement, and improved more and with greater satisfaction. Further, two studies of Department of Veterans Affairs residential treatment programs reported that veterans' satisfaction was associated positively with the perceived supportiveness of the social climate (Johnson et al., 1999; Kaspro, Frisman, & Rosenheck, 1999).

Finally, the quality and quantity of patients' participation in treatment have also been reported to exert a substantial influence on their satisfaction with mental health treatment (Anderson & Zimmerman, 1993; Hall, Irish, Roter, Ehrlich, & Miller, 1994; Hansson & Berglund, 1987). We believe that an essential component of the quality of participation is patients' commitment to working in therapy.

The study is designed to accomplish three goals that will extend the findings of prior investigations of patient satisfaction with the treatment of PTSD: (1) determination of the paths among patients' characteristics, program structure, treatment factors, patients' participation, and clinical outcome that contribute to patients' satisfaction with treatment; (2) determination of the extent of similarity in patients' satisfaction between the short and the long term; (3) determination of the similarity of the contributors to patients' satisfaction between inpatient/residential treatment and outpatient treatment.

We use structural equation models that incorporate both direct and indirect relationships among patients' characteristics, program structure, treatment factors, commitment, amount of participation, clinical outcome, and satisfaction. The models hypothesize direct effects and allow for the operation of indirect effects where these are plausible. Although the specific components of each category of these variables differ according to inpatient versus

outpatient status, they all follow the same set of structural hypotheses. Namely, because patient characteristics are features that patients bring to treatment and program structures are features of programs that are already in place as a matter of treatment policy, we specify them as exogenous variables that are hypothesized to have direct effects on treatment factors, commitment, amount of participation, and satisfaction as endogenous variables. In addition, degrees of freedom are provided to test the statistical significance of the model parameters by hypothesizing that program structures and severity of PTSD symptoms at the beginning of treatment, but not patient characteristics, have direct effects on clinical outcome. All effects of patient characteristics on outcome are hypothesized to be mediated by treatment factors, commitment, and amount of participation in treatment. This hypothesized mediation provides the degrees of freedom necessary to test the statistical significance of the direct effects. Next, because treatment factors are the primary features of the therapeutic program, they are hypothesized to have direct effects on commitment, amount of participation, clinical outcome, and satisfaction. Then, because commitment represents patients' application of their efforts to the tasks of therapy, commitment is hypothesized to have direct effects on the amount of their participation, clinical outcome, and satisfaction. In turn, because amount of participation in treatment represents the dosage of treatment received, amount of participation is hypothesized to have direct effects on clinical outcome and satisfaction. Finally, because clinical outcome is ostensibly the primary reason that patients are participating in treatment, outcome is hypothesized to have direct effects on satisfaction.

There are two prominent methodological limitations to previous investigations that make it difficult to determine the importance of the various factors that contribute to patients' satisfaction as well as how invariant it is over time. First is the limited generalizability of results from most prior studies, which typically include a single program site, serving one catchment area with a small group of clinicians. Mental health services provided by the national network of the Department of Veterans Affairs specialized PTSD programs provide a basis for studying satisfaction across a variety of site-specific services delivered to patients of varied demographic backgrounds by diverse, multidisciplinary clinical teams (Rosenheck & Fontana, 1996; Rosenheck, Fontana, & Errera, 1997; Rosenheck, Fontana, & Stolar, 1999).

The second limitation is that satisfaction is typically assessed only once following treatment. It is not known, therefore, how invariant one-shot assessments are over time (Sherbourne, Sturm, & Wells, 1999; Williams et al., 1998). If satisfaction is highly stable over time, it should

make little difference when it is assessed. On other hand, if satisfaction is only moderately stable over time, it may be that the determinants of satisfaction at one point in time will be different from the determinants at another point. A previous study identified two empirically distinct phases of outpatient PTSD treatment (Rosenheck & Fontana, 1996). The first phase was the 4-month period at the beginning of treatment, during which significant clinical change occurred for a number of patients. The second phase was one of stabilization that extended from the conclusion of the first phase through the end of the first year of treatment, during which very little additional clinical change occurred. We reasoned that satisfaction in these two phases might be associated differently with patients' characteristics on the one hand and treatment factors and participation on the other. For example, treatment factors and participation might make more of a contribution to satisfaction later in treatment after patients had more opportunity to experience them, while patients' pretreatment characteristics might contribute more to satisfaction earlier in treatment when patients would have had less opportunity to experience treatment factors and to participate fully in treatment.

Method

Participants

Participants were drawn from two separate studies: an inpatient study in which satisfaction was assessed at the time of discharge from the hospital, and an outpatient study in which satisfaction was assessed at both 4 months and 1 year following the initiation of treatment. The sample from the inpatient study consisted of 831 male veterans drawn from 11 highly respected programs within the VA (Fontana & Rosenheck, 1997a). Five programs were specialized PTSD treatment programs of a long stay type (100 days); three programs were specialized PTSD programs of a short to medium stay type (30 days); and three programs were general psychiatric programs which also averaged 30 days length of stay. Consecutive admissions were enrolled in the study over a 27-month period, from November of 1991 through January of 1994. Veterans averaged 45.22 ($SD = 3.20$) years of age and 12.99 ($SD = 1.99$) years of education. Thirty-eight percent were married currently, and 26% were of minority ethnicity.

The sample from the outpatient study consisted of a total of 554 male veterans (Rosenheck & Fontana, 1996). Forty-two percent ($n = 233$) continued in treatment for 1 year or longer, and these veterans constitute the sample for the 1-year analyses. Consecutive admissions were enrolled in the study from 1991 to 1993 from six PTSD clin-

ical teams. The teams were selected for their geographical diversity and their expertise in the treatment and assessment of PTSD. These teams typically saw veterans once or twice a week, individually and in groups, using a variety of modalities. Two of the most widely used modalities entailed focusing therapeutic attention on patients' psychological reactions to the traumas of war and on providing training in social skills that are relevant to successful functioning in their current lives. This paper examines both short (4 months) and long (1 year) term satisfaction. Veterans averaged 45.73 ($SD = 8.49$) years of age and 12.85 ($SD = 2.48$) years of education. Sixty-one percent were married currently, and 27% were of minority ethnicity.

Measures

The means and standard deviations of the model variables are presented in Table 1. We selected patients' characteristics that would replicate those used in earlier studies of satisfaction with treatment. These characteristics (age, educational level, employment, ethnic group membership, social isolation, participation in atrocities) have been shown empirically to be related to the severity or risk of PTSD in adult male military veterans (Fontana & Rosenheck, 1999; Ford, 1999) and to their response to specialized treatment for chronic PTSD (Ford, Fisher, & Larson, 1997; Ford & Kidd, 1998; Johnson et al., 1996; Rosenheck & Fontana, 1996). Ethnic group membership (1 = *minority* vs. 0 = *Caucasian*), employment (1 = *working* vs. 0 = *unemployed, disabled or retired*), and participation in atrocities (1 = *participated* vs. 0 = *did not participate*) were coded as dichotomous measures. Age and educational level were measured in years. Social isolation was based primarily on current residential status and secondarily on current marital status in the absence of information regarding residential status. Veterans living alone or with strangers or who were unmarried (in the absence of residential data) were coded 3; those living with friends or other veterans or living in a hospital, halfway house or shelter were coded 2; and those living with their spouse, children or relatives or who were married (in the absence of residential data) were coded 1.

Program structure was measured by the type of program in the inpatient study and the programs' reliance on medications in both the inpatient and outpatient studies. There were three program types as represented by 11 programs: five specialized inpatient PTSD units (SIPUs), three evaluation and brief treatment PTSD units (EBTPUs), and three general psychiatry units (GPUs). In the model, SIPUs and EBTPUs were contrasted with GPUs as the reference type. SIPUs utilized a mix of individual and group therapies that (1) fostered intensive

Table 1. Descriptive Statistics for Variables Used to Model Satisfaction With Treatment for PTSD Treatment

Domain	Inpatient (<i>N</i> = 831)	Outpatient	
		4 months (<i>N</i> = 554)	1 year (<i>N</i> = 233)
Patient characteristics			
Age	45.22 (3.20)	45.73 (8.49)	47.45 (10.31)
Education	12.99 (1.99)	12.85 (2.48)	12.93 (2.48)
Isolation	1.66 (0.84)	1.55 (0.82)	1.50 (0.85)
Minority ethnicity	0.26 (0.44)	0.27 (0.44)	0.25 (0.43)
Working	0.23 (0.58)	0.60 (0.88)	0.59 (0.87)
Participation in atrocities	0.53 (0.50)	0.29 (0.45)	0.32 (0.47)
Program structure			
SIPU	0.45 (0.50)		
EBTPU	0.27 (0.44)		
Medications	0.71 (0.46)	0.64 (0.48)	0.73 (0.44)
Treatment factors			
Social climate	49.81 (16.88)		
War trauma focus		1.39 (1.06)	1.48 (1.11)
Social skills training		0.51 (0.86)	0.72 (0.94)
Patient participation			
Commitment	2.67 (0.91)	2.54 (1.06)	2.73 (1.04)
Length of stay (days)	65.61 (50.82)		
Number of individual sessions		0.81 (0.66)	0.61 (0.53)
Number of group sessions		0.62 (1.17)	0.58 (0.87)
PTSD			
Admission	42.07 (5.39)	38.31 (7.74)	38.19 (7.76)
Outcome (follow-up & discharge)	40.35 (6.35)	36.85 (7.60)	37.01 (7.89)
Improvement rating		3.45 (0.68)	3.70 (0.73)
Satisfaction	2.96 (1.21)	3.16 (0.87)	3.36 (0.96)

Note. Standard deviations appear in parentheses. SIPU = Specialized Inpatient PTSD Unit. EBTPU = Evaluation and Brief Treatment PTSD Unit.

exploration of traumatic war-zone experiences and their consequences for social functioning, (2) encouraged peer support, confrontation and sharing among veterans with similar war-zone experiences, and (3) provided a safe and supportive setting for a structured treatment experience that typically lasted several months. SIPU patients were typically screened before entry so that the exploration of PTSD would not be compounded by acute psychiatric or substance abuse problems. Like SIPUs, EBTPUs utilized a mix of individual and group therapies, but they were less selective, had shorter waiting lists and lengths of stay, and focused less intensively on war experiences. EBTPUs were directed toward more immediate intervention for acute exacerbations of PTSD and comorbid disorders. Treatment in GPUs typically involved no screening or waiting period. Admission and discharge in the GPUs were based on the immediate and pressing need for hospitalization. SIPUs and EBTPUs were entered into the model as dummy variables.

Medications involved the provision of psychotropic medications that have been shown to have benefit for the remediation of PTSD and associated symptoms (Friedman, 1997). Medication status was assessed dichotomously (1 = *receiving medications*, 0 = *not receiving medications*) for each patient.

With regard to treatment factors, the social climate of the milieu was mainly relevant to the inpatient setting and was assessed only for those programs, while social skills training and war trauma focus was assessed only for outpatient programs. For the discharge study, veterans' perceptions of the social climate of the program milieu were assessed 2 weeks after admission by a modification of the Community Oriented Programs Environment Scale (Moos, 1988), in which items specific to discussion of combat experiences were added. Ten subscales were found to be intercorrelated highly, and we combined them into one index (Cronbach alpha = .87). The ten subscales were support, involvement, clarity, order, practical orientation, personal attention, autonomy, spontaneity, discouragement of expression of destructive anger, and discussion of wartime experiences with the staff.

Two modalities appear to represent the primary types of treatment provided in the outpatient programs. Social skills training subsumes the interventions focused on enhancing social skills, in light of the often profound impairment in interpersonal functioning associated with chronic PTSD in male military veterans (Ford, 1999). A second modality, war trauma focus, includes interventions aimed at helping patients identify and work through war trauma memories that precipitate PTSD's cardinal symptoms of

intrusive reexperiencing, avoidance, and hyperarousal (Ford et al., 1997; Johnson et al., 1996). Therapists rated patients on the proportions of treatment time during which the program delivered social skills training and a focus on war traumas to each patient. These proportions were rated on 4-point scales: 0 (*none*), 1 (*less than 10%*), 2 (*between 10 and 50%*), and 3 (*more than 50%*).

The quality of veterans' participation in treatment was measured by their commitment to working in therapy. It was assessed by therapists' ratings on a 5-point scale from 0 (*not at all*) to 4 (*maximally*) at the time of discharge for inpatients and at 4 months and 1 year following the initiation of treatment for outpatients. The quantity of veterans' participation in treatment was measured as length of stay (in days) for inpatients and the number of individual and group sessions for outpatients. They were assessed at the same time-points as commitment.

We measured clinical outcome in relation to the primary focus for treatment in specialized VA PTSD programs: reduction in severity of PTSD symptoms. Severity of PTSD symptoms was measured at admission and either at discharge or 4 months after discharge, depending on the study, by the Short Form of the Mississippi Scale (Fontana & Rosenheck, 1994). The Short Form is an 11-item version of the full Mississippi Scale (Cronbach alpha = .85) whose components were selected for their sensitivity to change in treatment and their comparability to the full scale. For outpatient programs we also measured clinicians' global impressions of improvement. These impressions are of interest because patients and clinicians often have somewhat different perspectives of PTSD symptom and impairment severity (Ford et al., 1997). We obtained clinicians' ratings of improvement in PTSD symptoms from the initiation of treatment to both 4 months and 1 year later on a 5-point scale that ranged from 1 (*substantial deterioration*) to 5 (*substantial improvement*).

Inpatients reported their satisfaction with the program at the time of discharge, and outpatients at both 4 months and 1 year. In each study, satisfaction was assessed on a 5-point scale ranging from 0 (*very dissatisfied*) to 4 (*very satisfied*). This item was chosen to correspond to the highest weighted item ($r = .87$) in the Client Satisfaction Questionnaire (Attkisson & Zwick, 1982).

Procedure

At the time of admission to the hospital, veterans' program type was recorded and an assessment was made by structured interview of veterans' sociodemographic background and symptoms. At discharge, a program clinician using standardized patient-specific questionnaires reported veterans' medication status and the amount and

quality of their participation in treatment. At the same time, veterans' perceptions of social climate and their symptoms and satisfaction were assessed by a structured interview that was administered by an independent research assistant.

At the time of admission to outpatient treatment, an assessment was made by structured interview of veterans' sociodemographic background and severity of PTSD symptoms. Four months and 12 months later, severity of veterans' symptoms and their satisfaction with treatment were assessed from them by structured interview. At the same times, medication status, program factors, the amount and quality of veterans' participation in treatment and their improvement in PTSD symptom severity were documented by their clinicians using standardized questionnaires. To provide comparable time periods for the assessments of the program, participation, outcome, and satisfaction variables, the time-period surveyed at the 4-month assessment was the interval from intake to 4 months later, and the time period for the 12-month assessment was the 4-month interval between 8 and 12 months after intake.

Data Analysis

Structural equation modeling is an extension of multiple regression analysis that is well-suited to the evaluation of a *set* of postulated interrelationships. Statistically, the extension involves the simultaneous solution of the set of equations expressing the interrelationships and the use of all information in deriving each of the parameter estimates in the model (Bollen, 1989; Hayduk, 1987; James, Mulaik, & Brett, 1982). Conceptually, the extension involves the specification of a model of linkages that serves as a map to the selection of variables to be included in each equation.

The first step in the data analysis was estimating the model for satisfaction at the time of discharge for the inpatient sample; then estimating a comparable model for both short and long term satisfaction for the outpatient sample. As recommended by Hu and Bentler (1999), the adequacy of the fit of each of the model estimations to the data was determined by a combinational pattern of .95 or more for the comparative fit index (CFI) and .09 or less for the standardized root mean square residual (SRMR). Significant ($p < .05$) path coefficients are presented in the figures that diagram the models. All significance levels are based on 2-tailed tests.

Path coefficients are presented as standardized regression coefficients in order to facilitate their comparison across different paths. As such, they are most comparable to correlation coefficients. Noncausal associations among

Table 2. Bivariate Correlation Matrix Used to Model Satisfaction With Inpatient Treatment

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—													
2. Education	.08	—												
3. Isolation	-.03	.03	—											
4. Minority	.07	.01	-.04	—										
5. Working	-.01	.06	.01	.03	—									
6. Atrocities	-.06	-.10	.03	-.03	-.11	—								
7. SIPU	.01	.04	.07	-.02	-.01	.02	—							
8. EBTPU	.08	.01	-.02	.02	.00	-.04	-.55	—						
9. Medications	-.02	.00	-.11	-.04	.01	-.07	-.36	.13	—					
10. Social climate	.02	-.01	.00	.08	.01	-.03	.20	.29	-.09	—				
11. Commitment	-.03	-.03	-.11	-.05	.04	.01	.10	-.01	-.01	.15	—			
12. Length of stay	.05	.04	.09	.00	-.02	.01	.68	-.34	-.07	.20	.13	—		
13. PTSD admission	-.02	-.10	-.08	-.01	-.11	.15	-.08	-.04	.05	-.13	-.05	-.09	—	
14. PTSD outcome	-.04	-.03	-.07	-.02	-.06	.18	.07	-.11	.01	-.13	-.09	.04	.61	—
15. Satisfaction	.09	-.06	-.05	.05	.03	.01	.23	.29	-.10	.44	.25	.24	-.09	-.13

Note. $N = 831$. An $r = .07$ was statistically significant at $p < .05$. SIPU = Specialized Inpatient PTSD Unit. EBTPU = Evaluation and Brief Treatment Unit.

the exogenous variables were included in the estimation of the models, but, in the interests of clarity of exposition, they are not diagrammed in the figures. They can be found, however, as components of the correlation matrices in Tables 2 and 3. The small arrows that are attached to each variable but do not proceed from another variable indicate the disturbance for that variable (that is, the proportion of variance for that variable that is unaccounted for by the model).

Parameter estimation was performed by the Mplus program (Muthen & Muthen, 1998). A two-level analysis would have been most preferable in order to model and evaluate variation among programs, but the small number of programs in each sample precluded such an analysis. Single-level analyses were used, therefore, to model treat-

ment program variation exogenously in the analysis for the inpatient sample and as control variables in the analyses for the outpatient sample. A particular advantage to single-level analyses with the Mplus program is that the program estimates parameter values for the full sample, including subjects with both complete and missing data. Since we knew of no systematic conditions leading to missing data, we considered the data to be suitable for missing data estimation.

Results

We proceeded with model estimation by first determining the fit of the model to the data from the inpatient study (Fig. 1). The model was specified by the

Table 3. Bivariate Correlation Matrices Used to Model Satisfaction With Outpatient Treatment

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	—	-.10	-.16	.01	-.24	-.27	-.26	.26	-.20	.20	-.26	-.06	-.52	-.47	.17	.19
2. Education	-.09	—	.07	.00	.26	-.02	-.13	.04	-.13	.07	.04	.05	-.25	-.26	.06	.05
3. Isolation	-.13	.01	—	.03	-.11	.02	.01	-.11	.03	-.17	.12	-.06	.13	.03	-.11	-.10
4. Minority	-.03	-.04	.06	—	-.14	.17	.02	-.12	.11	-.15	-.04	.00	.10	.02	.09	-.06
5. Working	-.18	.20	-.11	-.13	—	-.06	-.16	-.01	-.11	.02	.02	-.08	-.17	-.16	-.01	.13
6. Atrocities	-.19	-.03	-.01	.07	-.09	—	.10	.00	.09	-.14	.15	.01	.28	.29	-.07	-.05
7. Medications	-.15	-.13	.04	.12	-.19	.10	—	-.09	.12	-.03	.16	-.04	.32	.32	.07	-.08
8. War trauma	.20	.05	-.03	-.09	-.08	.04	.03	—	.05	.51	.19	.13	-.11	.02	.37	.22
9. Social skills	-.13	.02	-.02	.01	.03	-.02	.09	.06	—	.14	.13	.16	.25	.22	-.11	-.15
10. Commitment	.15	.10	-.12	-.17	.06	-.07	.00	.35	.07	—	.20	.24	-.06	-.07	.27	.19
11. Individual sessions	-.11	.06	.10	-.08	.00	.07	.18	.16	.21	.25	—	.02	.25	.27	.07	.16
12. Group sessions	-.06	-.07	.00	.01	-.02	.07	.08	.22	.36	.09	.13	—	.17	.14	-.12	-.13
13. PTSD admission	-.35	-.21	.12	.07	-.21	.23	.28	.04	.13	.01	.20	.21	—	.69	-.10	-.14
14. PTSD outcome	-.33	-.16	.06	.09	-.18	.22	.32	.05	.08	.00	.18	.18	.77	—	-.16	-.20
15. Improvement rating	.08	.03	-.11	.00	-.06	-.02	.18	.24	.14	.30	.14	.12	.02	-.01	—	.21
16. Satisfaction	.16	.08	-.11	-.08	.16	-.08	-.07	.09	-.07	.28	.11	-.08	-.14	-.18	.11	—

Note. The 4-month sample appears below the diagonal ($N = 554$; $r = .09$ was significant at $p < .05$); the 1-year sample appears above the diagonal ($N = 233$, $r = .14$ was significant at $p < .05$).

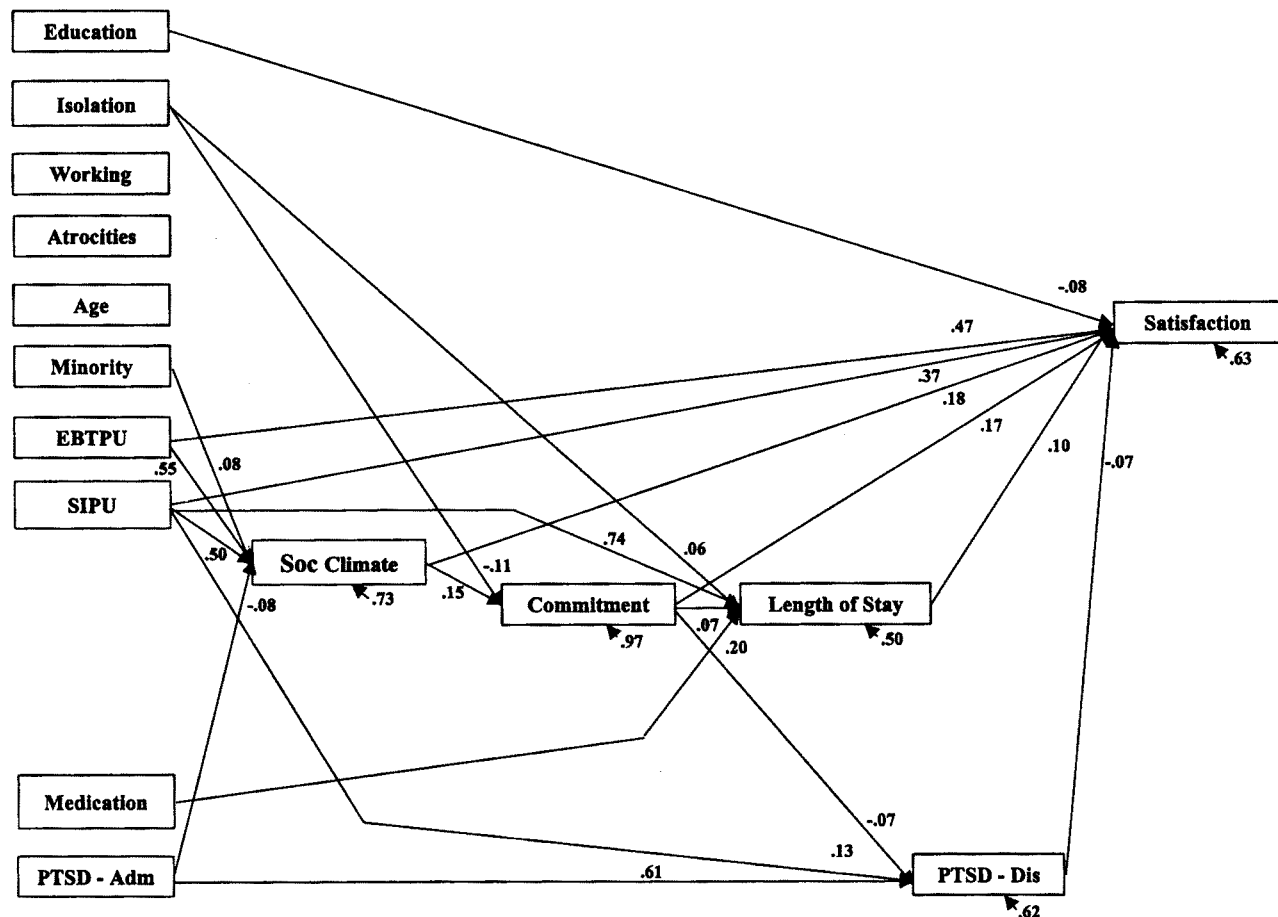


Fig. 1. Standardized regression coefficients for the model of satisfaction with inpatient treatment at discharge. Model includes severity of PTSD symptoms at admission (PTSD - Adm) and discharge (PTSD - Dis).

following five equations: (1) social climate was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at admission, medications, SIPU, and EBTPU; (2) commitment was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at admission, medications, SIPU, EBTPU, and social climate; (3) length of stay was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at admission, medications, SIPU, EBTPU, social climate, and commitment; (4) Mississippi score at discharge was regressed on Mississippi score at admission, medications, SIPU, EBTPU, social climate, commitment and length of stay; and (5) satisfaction was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at admission, medications, SIPU, EBTPU, social climate, commitment, length of stay, and Mississippi score at discharge.

The chi-square for the model was 10.56 (6, $N = 831$, $p > .05$), with a CFI of .998 and a SRMR of .01. The model was then trimmed by deleting all components of the equations that did not reach statistical significance at $p < .05$. Evaluation of the trimmed model produced a chi-square of 35.98 (25, $N = 831$, $p > .05$). The trimmed model is diagrammed in Fig. 1.

Among the paths in Fig. 1, the following are key for delineating the major avenues to patients' satisfaction. The direct contributors to satisfaction show that it was influenced positively and most strongly by participation in specialized PTSD programs compared to general psychiatric programs; then by the social climate of the milieu and commitment to working in therapy; followed by length of stay, reduction in severity of PTSD symptoms and a lower educational level. Additionally, commitment contributed to a longer length of stay and a reduction in severity of PTSD symptoms. In turn, commitment was enhanced by a positive social climate and less social isolation among

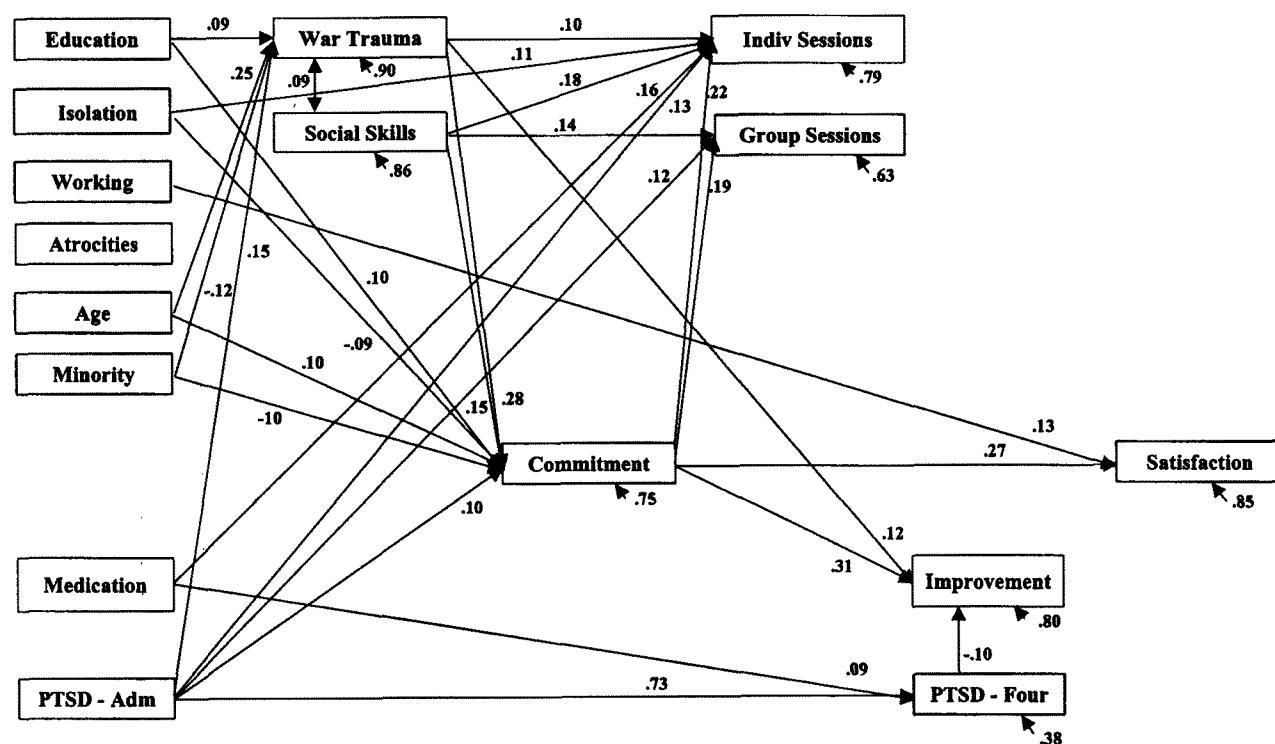


Fig. 2. Standardized regression coefficients for the model of satisfaction with outpatient treatment 4 months after beginning treatment. Model includes severity of PTSD symptoms at admission (PTSD - Adm) and 4 months later (PTSD - Four).

veterans pretreatment. Reliance on medications by a program contributed to a longer length of stay.

Next, a comparable model was estimated for satisfaction at 4 months and at 1 year on the data from the outpatient study (Figs. 2 and 3). The data for medications, war trauma focus, social skills training, commitment, group sessions, individual sessions, and improvement were all assessed at both 4 and 12 months and were used in the model that corresponded to their respective time-points.

The model was specified by the following 10 equations: (1) and (2) war trauma focus and social skills training were each regressed on isolation, education, minority ethnicity, Mississippi score at intake, medications, age, employment status, participation in atrocities, and five dummy variables for treatment program; (3) a noncausal association was specified between war trauma focus and social skills training; (4) commitment was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at intake, medications, five dummy variables for treatment program, war trauma focus, and social skills training; (5) and (6) number of group and individual sessions were each regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at intake, medications, five dummy variables for

treatment program, war trauma focus, social skills training, and commitment; (7) a noncausal association was specified between group and individual sessions; (8) Mississippi score at 4 months was regressed on Mississippi score at intake, medications, five dummy variables for treatment program, war trauma focus, social skills training, commitment, number of group sessions, and number of individual sessions; (9) clinician-rated improvement was regressed on Mississippi score at intake, medications, five dummy variables for treatment programs, war trauma focus, social skills training, commitment, number of group sessions, number of individual sessions, and Mississippi score at 4 months; and (10) satisfaction was regressed on isolation, education, minority ethnicity, age, employment status, participation in atrocities, Mississippi score at intake, medications, five dummy variables for treatment program, war trauma focus, social skills training, commitment, number of group sessions, number of individual sessions, Mississippi score at 4 months, and improvement. The model for short-term satisfaction (4 months) had a chi-square of 13.55 (12, $N = 554$, $p > .30$), with a CFI of .999 and a SRMR of .007. For long-term satisfaction (1 year), the model had a chi-square of 22.16 (12, $N = 233$, $p < .05$), with a CFI of .995 and a SRMR of .013. All models, therefore, satisfied the criteria for goodness of fit.

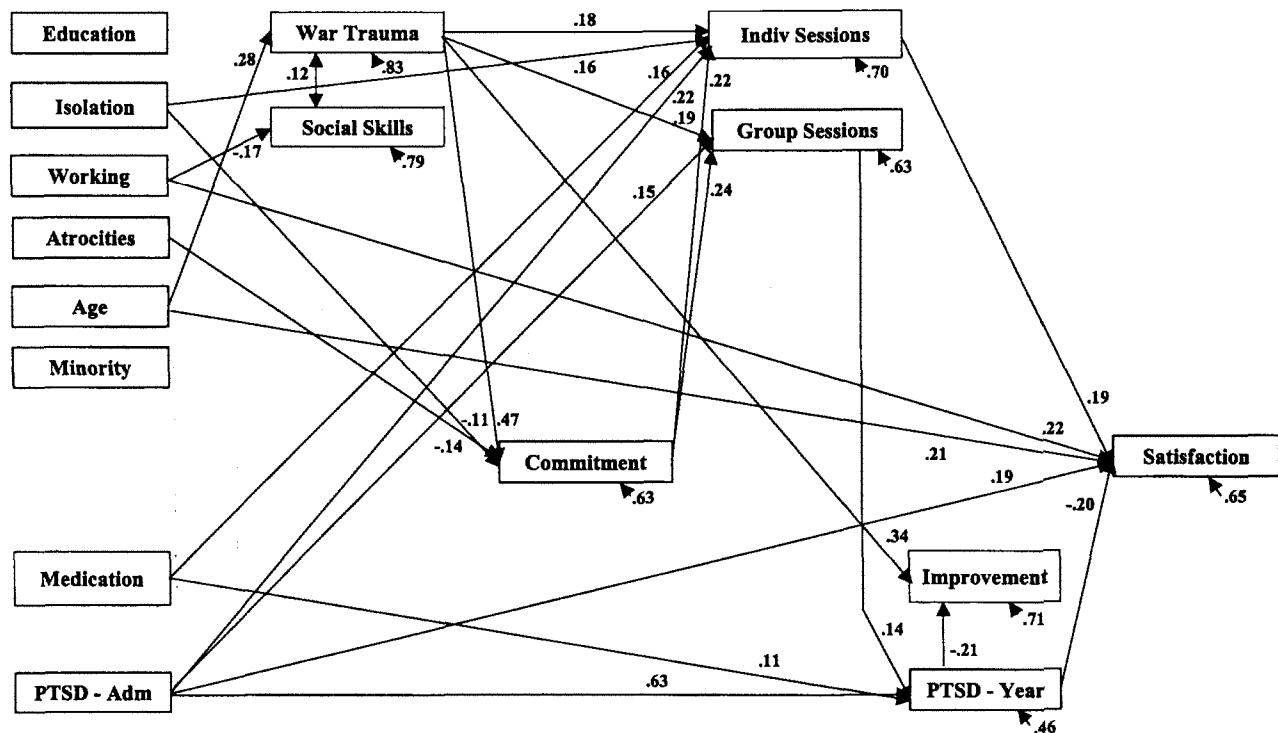


Fig. 3. Standardized regression coefficients for the model of satisfaction with outpatient treatment 1 year after beginning treatment. Model includes severity of PTSD symptoms at admission (PTSD - Adm) and 1 year later (PTSD - Year).

The models were then trimmed by deleting all components of the equations that did not reach statistical significance at $p < .05$. Evaluation of the trimmed models produced a chi-square of 88.41 (49, $N = 554$, $p < .001$) with a CFI of .986 and a SRMR of .026 for short-term satisfaction and a chi-square of 69.35 (47, $N = 233$, $p < .02$) with a CFI of .986 and a SRMR of .033 for long-term satisfaction. The trimmed models are diagrammed in Figs. 2 and 3.

Several of the paths in Fig. 2 replicated comparable paths in Fig. 1: satisfaction was directly and positively influenced by commitment; commitment contributed to greater participation in the form of number of both individual and group sessions; less socially isolated veterans showed greater commitment and greater participation in the form of number of individual sessions; the treatment factors of war trauma focus and social skills training both contributed to greater commitment; and programmatic reliance on medication contributed to greater participation in the form of number of individual sessions. In addition, it is noteworthy that working status is the only pretreatment patient characteristic that had a direct effect on satisfaction.

Of the paths in Fig. 3, several are shared with those in Figs. 1 and 2: commitment contributed to greater participation in the form of the number of both individual and group sessions; less socially isolated veterans had a higher

commitment and participated in a greater number of individual sessions; focus on war traumas as a treatment factor contributed to greater commitment and a greater number of individual sessions; and reliance on medications contributed to greater participation in form of number of individual sessions. In addition, Fig. 3 shares two other paths with Fig. 1: greater participation, in the form of number of individual sessions, contributed to greater satisfaction, as did reduction in severity of PTSD symptoms. Finally, Fig. 3 shares seven other paths with Fig. 2 showing the high degree of commonality in the patterns between 4 months and 1 year: working status had a direct effect on satisfaction; focus on war traumas and reduction in the severity of PTSD symptoms contributed to a higher rating of improvement by therapist; reliance on medications was associated with less of a reduction in the severity of PTSD symptoms; severity of PTSD symptoms at the beginning of treatment contributed to greater participation in the form of the number of both individual and group sessions; and older age contributed to a more intensive focus on war traumas.

Bivariate relationships revealed that satisfaction at 4 months and 12 months were correlated .53 with each other. Perfect agreement across the 5-point scale occurred in 62% (116/188) of the cases.

Discussion

A major strength of the present study is that a common methodology was used to collect the data across both inpatient and outpatient settings, and across both short and long-term treatment within the outpatient setting. This enabled us to specify comparable models of satisfaction across multiple settings and conditions. The presence of commonalities across the models, in turn, provides a strong basis for identifying certain relationships as generalizations concerning the sources of patients' satisfaction with treatment. Exceptions to these generalizations indicate important concessions that should be made in an overall conceptualization to the particular setting in which satisfaction is being considered.

Our hypotheses that patient characteristics would have direct effects on treatment factors, commitment, amount of participation and satisfaction were supported. Social isolation was a particularly strong and pervasive contributor to lower commitment and higher amount of participation among both inpatients and outpatients and across time for outpatients. Being employed contributed to greater satisfaction both short and long term for those in outpatient treatment. Older patients received more war trauma focused treatment both short and long term than younger patients. The hypothesized effects of program structures and severity of PTSD symptoms at the beginning of treatment on clinical outcome received support as well. Treatment by the long-stay programs for inpatients and receipt of medications for outpatients contributed to poorer outcomes. Although there was a decrease in symptoms overall, patients with more severe symptoms at the beginning of treatment had poorer outcome. As hypothesized further, patient characteristics had no direct effects on outcome.

Treatment factors were hypothesized to have direct effects on commitment, amount of participation, clinical outcome, and satisfaction. These hypotheses were supported by the contribution of a positive social climate to greater commitment among inpatients, and by the contribution of greater emphasis on war trauma focus on commitment among outpatients both short and long term. In addition, emphasis on war trauma focused treatment contributed to ratings of greater improvement by therapists over the course of the entire year. Commitment was hypothesized to have direct effects on amount of participation, clinical outcome, and satisfaction. These hypotheses were borne out by the contributions of greater commitment to longer lengths of stay among inpatients and more individual and group sessions among outpatients. Further, patients with greater commitment were more satisfied with their inpatient treatment and with their outpatient treat-

ment in the short term. More committed inpatients had a greater decrease in PTSD symptoms, and more committed outpatients were rated as more improved by their therapists in the short term.

Amount of participation was hypothesized to have direct effects on outcome and satisfaction. This hypothesis was borne out among inpatients by the contribution of greater length of stay to higher satisfaction and among outpatients in the long term by the contribution of more individual sessions to higher satisfaction. Finally, clinical outcome was hypothesized to have a direct effect on satisfaction. A reduction in severity of PTSD symptoms contributed to higher satisfaction among inpatients and among outpatients in the long term.

Both the quality and quantity of patients' participation in treatment were shown to have direct effects on satisfaction in two of the three models. Moreover, quality had indirect effects in the third model. Specifically, commitment to working in therapy contributed directly to satisfaction in the inpatient and short-term outpatient models, and indirectly in the long-term outpatient model. Length of stay and number of individual sessions had direct effects on satisfaction in both the inpatient and long-term outpatient models. Not only were quality and quantity of participation related consistently to satisfaction across models, but also each was shaped consistently by treatment factors and patient characteristics. With regard to quality of participation, outpatients whose treatment focused more on war traumas had more commitment to working in therapy, and inpatients who experienced the social climate of the milieu more positively had greater commitment. Among inpatients and outpatients alike, those who were socially isolated pretreatment showed less commitment to working in therapy. With regard to quantity of participation, patients who received medications or who were socially isolated pretreatment had longer lengths of stay as inpatients or participated in more individual sessions as outpatients. Veterans who were socially isolated participated longer in treatment, whether it was length of stay as inpatients or number of individual sessions as outpatients.

The centrality of the quality and quantity of participation in treatment to the development of patient satisfaction is a conclusion that differs from that of much prior research (including our own), which has suggested that patient characteristics rather than treatment outcomes are the major contributors to patient satisfaction. We believe that the earlier conclusion was drawn because treatment factors were underrepresented in previous studies in both number and conceptual richness. The present study includes many more treatment factors than have been included typically; and inclusion of factors such as commitment, social climate, and war trauma focus capture aspects

of the therapeutic process that have been largely missing from prior research. The present results are consistent with previous clinical research findings suggesting that engagement in treatment is a prerequisite to tolerating the emotionally or interpersonally difficult aspects of PTSD treatment (Ford et al., 1997; Ford & Kidd, 1998; Johnson et al., 1996). The findings also indicate that engagement in therapy, as represented by commitment, has an effect on satisfaction that is distinct from that of other forms of productive engagement in life such as employment. We believe, therefore, that commitment on patients' part reflects their expectation that therapy in particular will be effective for them as well as their comfort in participating in the particular tasks of therapy. Socially isolated patients seem to have an especially difficult time in developing as strong a commitment as other patients. The negative path from social isolation to commitment suggests that successfully engaging patients in therapy with this background is likely to require greater effort and/or extra interventions by therapists.

Veterans' experience of the milieu's social climate emerged as one of the major contributors to satisfaction, even after taking into account veterans' preferences for the two types of specialized PTSD programs with which social climate was strongly associated. That is, perceived social climate added to the contributions of both program types by capturing unique variance with satisfaction. This finding is consistent with preliminary results from earlier studies of the role of perceived social climate in inpatient PTSD treatment (Johnson et al., 1999). It replicates partially the results of the Moos and Moos (1998) study of residential substance abuse programs, but differs in that in the present study social climate was associated with patients' satisfaction but not with clinical outcome. Patients' perceptions of the social climate are presumably a product of both the program structure and each patient's unique experience of it. The achievement of a residential milieu that is experienced as organized, supportive, and grounded in clear communication between staff and patients appears to be equally important as any other aspect of the treatment program or process to the achievement of patients' satisfaction with their treatment. It must be acknowledged, however, that the accomplishment of this end depends upon a complex set of behaviors between clinicians and patients that are conditioned by the context of their interaction. Understanding this complexity better should be a goal of future studies of satisfaction specifically and of service delivery generally.

A notable difference in significant contributors among the models entails the shift from commitment to number of sessions as the major contributor to satisfaction with outpatient treatment in the short compared to the long

term. In the short term, patients' commitment played a direct and sizable role in determining their satisfaction. Long term, the effect of their commitment on satisfaction was superseded in influence by the number of individual sessions that they received. One might question whether the difference is due to the inclusion of many patients in the short term who are not included in the long term because they discontinued treatment. We investigated this possibility by estimating the model in the short term on only those veterans who constituted the long-term sample. The pattern of significant paths was virtually identical. The explanation resides, therefore, in something that is different between the short and long term. It is possible that long-term outpatient treatment lends itself to a progressive selection on the part of both patients and therapists of certain patients into individual therapy. Specifically, committed patients seem to prefer individual therapy, and therapists seem to prefer to work individually with committed patients. Given these circumstances, then, it would not be surprising to see a shift in patients' primary source of satisfaction from working in treatment *per se* to having the attention that comes from an individual relationship with a therapist.

The shift over time in primary influence on satisfaction from commitment to number of individual sessions has implications for the stability of satisfaction and the preferred time for its assessment. Although satisfaction was generally stable from 4 to 12 months, there was enough change in ratings to indicate that satisfaction is not a fixed, trait-like characteristic of the patient. If satisfaction that is driven mostly by commitment to working in treatment is desired, it would be better assessed earlier rather than later in treatment. Another reason for assessing satisfaction earlier rather than later in treatment is the greater inclusion of the patient population with regard to active participation in treatment (Fontana & Rosenheck, 1997b; Rosenheck & Fontana, 1996).

Some differences in the pattern of significant contributors to satisfaction also exist between the inpatient and outpatient analyses. The pattern among inpatients and outpatients in the long term is similar in that quantity of participation and reduction in PTSD symptom severity have direct effects on satisfaction. What is different between them is that commitment has a significant direct effect among inpatients but not among outpatients in the long term. Moreover, it is precisely in this relationship between commitment and satisfaction that the pattern is similar between inpatients and outpatients in the short term, although the pattern between these two groups differs regarding quantity of participation and reduction of PTSD symptom severity. The inpatient analysis, therefore, appears to capture phenomena related to both the

shorter duration of outpatient treatment in the short term and the greater intensiveness of outpatient treatment in the long term. This is a reasonable characterization of the inpatient setting because the duration of their programs averaged 65.6 days and their treatment intensiveness consisted of several hours of structured programming each day.

All models showed a small to nonexistent impact of clinical improvement on patients' satisfaction. This is consistent with prior research (e.g., Fontana & Rosenheck, 2001; Rosenheck, Fontana, et al., 1997; Rosenheck Wilson, et al., 1997). A reduction in the severity of PTSD symptoms had a small but statistically significant impact on satisfaction among inpatients and among outpatients in the long term. There was no significant impact in the short term. Clinicians' ratings of improvement were shaped in part by the reduction in PTSD severity as assessed from patients' reports, but in no case did the improvement ratings contribute to patients' satisfaction over and above patients' reports of the change in PTSD symptom severity. Thus, although clinicians' ratings incorporated much information that was not attributable to patients' change scores, this additional information did not contribute significantly to patients' satisfaction. From a methodological point of view, supplementing or replacing patients' change scores with clinicians' ratings would add little to the role of clinical outcomes as a source of patients' satisfaction. Outcomes and satisfaction appear to be largely separate indicators of quality of care.

The model for the inpatient sample showed veterans' clear preference for being treated in specialized PTSD programs compared to general psychiatric programs. These results bear out early observations from clinicians who have treated veterans with PTSD. Namely, veterans with PTSD generally resist thinking of themselves as having mental illness (Lifton, 1978), and they usually resent being housed or treated with veterans who have other psychiatric disorders, particularly psychoses (Arnold, 1985). These results also indicate that, even within specialized PTSD programs, veterans may make distinctions. The shorter-term EBTPUs elicited higher satisfaction than the longer-term SIPUs, despite the fact that length of stay contributed positively to satisfaction over and above its association with program type. Discovery of the reasons for veterans' greater satisfaction with EBTPUs goes beyond the scope of this paper, but it is an issue that deserves further attention.

There are three limitations to the study that need to be acknowledged. One is that satisfaction was assessed by a brief global index that may not have provided a sufficiently comprehensive indication of the range of patients' satisfaction. However, psychometric research on patient

satisfaction indicates that most items can be eliminated if a few focal items are retained, and that the factors generated by lengthier questionnaires can be subsumed within a single global construct (Attkisson & Zwick, 1982; Lebow, 1983; Lewis, 1994; Marshall, Hays, Sherbourne, & Wells, 1993). A second limitation is that the maximum amount of variance in satisfaction ratings that was accounted for by our models is 37%. Although this is quite respectable for this area of research, it does mean that other variables not included in the model still remain to be identified as major contributors. There are several patient variables that deserve attention in the future such as expectations of treatment, predispositions to be satisfied in general, or personality characteristics such as their resilience, optimism or locus of control. Finally, it is unknown how generalizable the results are beyond veterans being treated for PTSD in DVA specialized programs. Although the results are similar in many respects to those from other studies, further comparative research is needed to determine generalizability conclusively.

In conclusion, our findings indicate that patients' satisfaction with PTSD treatment may be assessed as an indicator of quality of care separate from clinical outcomes. The quality and quantity of patients' participation in treatment were central to the development of their satisfaction, displacing the preeminent role typically assigned to patients' pretreatment characteristics. Patients' pretreatment social isolation, however, did emerge as a repeated contributor to the quality and quantity of their participation, at least in psychotherapeutically oriented treatment programs. Among other treatment characteristics, the social climate of the milieu and the focus on war traumas had major effects on the quality and quantity of patients' participation and their satisfaction. We conclude that clinicians are likely to be most successful in maximizing patients' satisfaction with PTSD treatment to the extent that they can foster patients' experience of a supportive social climate, attend to their war traumas, enhance their engagement in treatment and address the distancing effects of their pretreatment social isolation. Particularly valuable among future studies would be those that identify changes in policy and behavior that can be prescribed by clinical managers and implemented by clinicians to bring about these effects.

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